Mr. Percy Groom, B.A., late of Trinity College, has been elected to the Frank Smart Studentship in Botany at Gonville and Caius College.

The fittings of the new Chemical Laboratory are costing £1000 more than was originally estimated (from rough drawings only) by Mr. Lyon, Superintendent of the University workshops. Some of this is due to the fact that the fixing of the tables on a bottom independent of the floors of the rooms, and making the cupboard doors fairly dust-proof, originally recommended, was not adopted till after the tables had been fixed, and much cutting of the floors had to be done. Also much of the iron and steel work was not particularized at first.

The Council are taking steps to carry out the appropriation of the old Chemical Laboratory to the department of pathology.

Prof. Darwin will lecture during the long vacation on the theory of the potential, and on attractions, commencing on Tuesday, July 10. The lectures will treat principally of gravitational problems, including attraction of ellipsoids, Gauss's paper, heat of tin, Jacobi's and Dedekind's ellipsoids, oscillations of a fluid sphere, the foundation of the theory of tides, atmospheres of planets, &c.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, May 3.—"Effect of Chlorine on the Electromotive Force of a Voltaic Couple." By Dr. G. Gore, F.R.S.

If the electromotive force of a small voltaic couple of unamalgamated magnesium and platinum in distilled water, is balanced through the coil of a moderately sensitive galvanometer of about 100 ohms resistance, by means of that of a small Daniell's cell, plus that of a sufficient number of couples of iron and German silver of a suitable thermo-electric pile (see Proc. Birm. Philos. Soc., vol. iv. p. 130), the degree of potential being noted; and sufficiently minute quantities of very dilute chlorine water are then added in succession to the distilled water, the degree of electromotive force of the couple is not affected until a certain definite proportion of chlorine has been added; the potential then suddenly commences to increase, and continues to do so with each further addition within a certain limit. Instead of making the experiment by adding chlorine water, it may be made by gradually diluting a very weak aqueous solution of chlorine.

The minimum proportion of chlorine necessary to cause this sudden change of electromotive force is extremely small; in my experiments it has been 1 part in 17,000 million parts of water,[1] or less than 1/7000 part of that required to yield a barely perceptible opacity in ten times the bulk of a solution of sal-ammoniac by means of nitrate of silver. The quantity of liquid required for acting upon the couple is small, and it would be easy to detect the effect of the above proportion, or of less than one ten-thousand-millionth part of a grain of chlorine, in one-tenth of a cubic centimetre of distilled water by this process. The same kind of action occurs with other electrolytes, but requires larger proportions of dissolved substance.

As the degree of sensitiveness of the method appears extreme, I add the following remarks. The original solution of washed chlorine in distilled water was prepared in a dark place by the usual method from hydrochloric acid and manganic oxide, and was kept in an opaque well-stoppered bottle in the dark. The strength of this liquid was found by means of volumetric analysis with a standard solution of argentic nitrate in the usual manner, the accuracy of the silver solution being proved by means of a known weight of pure chloride of sodium. The chlorine liquid contained 2·3 milligrammes or 0·03565 grain of chlorine per cubic centimetre, and was just about three-fourths saturated.

One-tenth of a cubic centimetre of this solution ("No. 1"), or 0·003565 grain of chlorine, was added to 9·9 c.c. of distilled water and mixed. One cubic centimetre of this second liquid ("No. 2"), or 0·0003565 grain of chlorine was added to 99 c.c. of water and mixed; the resulting liquid ("No. 3") contained 0·000003565 grain of chlorine per cubic centimetre. To make the solutions ("No. 4") for exciting the voltaic couple, successive portions of $\frac{1}{10}$ or $\frac{1}{20}$ c.c. of ("No. 3") liquid were added to 900 cubic centimetres of distilled water and mixed.

I have employed the foregoing method for examining the states and degrees of combination of dissolved substances in electrolytes, and am also investigating its various relations.

May 17.—"Magnetic Qualities of Nickel." By J. A. Ewing, F.R.S., Professor of Engineering, University College, Dundee, and G. C. Cowan.

The experiments described in the paper were made with the view of extending to nickel the same lines of inquiry as had been pursued by one of the authors in regard to iron (Phil. Trans., 1885, p. 523). Cyclic processes of magnetization have been studied, in which a magnetizing force of about 100 C.G.S. units was applied, removed, reversed, again removed, and re-applied, for the purpose of determining the form of the magnetization curve, the magnetic susceptibility, the ratio of residual to induced magnetism, and the energy dissipated in consequence of hysteresis in the relation of magnetic induction to magnetizing force. Curves are given, to show the character of such cycles for nickel wire in three conditions: the original hard-drawn state, annealed, and hardened by stretching after being annealed. The effects of stress have also been examined (1) by loading and unloading magnetized nickel wire with weights which produced cyclic variations of longitudinal pull, and (2) by magnetizing while the wire was subjected to a steady pull of greater or less amount. The results confirm and extend Sir William Thomson's observation that longitudinal pull diminishes magnetism in nickel. This diminution is surprisingly great: it occurs with respect to the induced magnetism under both large and small magnetic forces, and also with respect to residual magnetism. The effects of stress are much less complex than in iron, and cyclic variations of stress are attended by much less hysteresis. Curves are given to show the induced and residual magnetism produced by various magnetic forces when the metal was maintained in one or other of certain assigned states of stress; also the variations of induced and residual magnetism which were caused by loading and unloading without alteration of the magnetic field. Values of the initial magnetic susceptibility, for very feeble magnetizing forces, are stated, and are compared with the values determined by Lord Rayleigh for iron, and the relation of the initial susceptibility to the stress present is investigated. The paper consists mainly of diagrams in which the results are graphically exhibited by means of curves.

Chemical Society, May 3.—Mr. W. Crookes, F.R.S., in the chair.—The following papers were read:—The determination of the molecular weights of the carbo-hydrates, by Mr. H. T. Brown and Dr. G. H. Morris. The law established by Blagden in 1788, that the lowering of the freezing-point of aqueous solutions of inorganic salts is proportional to the weight of substance dissolved in a constant weight of water, was extended by de Coppet in 1871–72, who pointed out that when the lowering of the freezing-point is calculated for a given weight of the substance in 100 grammes of water, the result, which he termed the coefficient of depression, is constant for the same substance, and that the coefficients for different substances bear a simple relation to their molecular weights. Raoult extended the law to organic substances and to other solvents than water, and showed that when certain quantities of the same substance are successively dissolved in a solvent upon which it has no chemical action, there is a progressive lowering of the point of congelation of the solution, and that this lowering is proportional to the weight of the substance dissolved in a constant weight of water. The "coefficient of depression," A—that is, the depression of the point of congelation produced by 1 gramme of the substance in 100 grammes of the solvent—is given by the formula $\frac{C \times y}{x \times 100} = A$, where C is the observed depression produced by x grammes of the substance dissolved in y grammes of the solvent, and from this value the "molecular depression," T, is calculated by the formula $M \times A = T$, where M is the molecular weight of the substance in question. T is a value varying with the nature of the solvent, but remaining constant with the same solvent for numerous groups of compounds, whence it follows that A and T being known, the molecular weight of the substance in question may be determined from the equation $M = T/A$. This method of Raoult's, which is of value in cases where a vapour density determination is not possible, has been employed by the authors to determine the molecular weights of the following carbo-hydrates: dextrose, cane-sugar, maltose, milk-sugar, arabinose, and raffinose, and also that of mannitol (the solvent being water), with results which lead to formulæ identical with those ordinarily adopted for these substances.—The molecular weights of nitric peroxide and nitrous anhydride, by Prof. Ramsay. The molecular weight of nitric peroxide as determined by Raoult's method in acetic acid solution, accords with the formula N_2O_4. No definite results could be obtained with nitrous anhydride since dissociation occurred at the temperature of experiment (16°).—In the discussion which followed the reading of these papers, and in which Prof. Debus, F.R.S., Dr. Perkin, F.R.S., and others took part, Mr. Wynne remarked that most results hitherto obtained by Raoult's method pointed to a complete dissociation of the complex molecules present in solids and liquids, and would seem to show that the dissociation is not dependent on the particular solvent employed; Mr. Crompton referred to the great irregularities noticeable on comparing the molecular depressions of various substances as determined by Raoult, and thought that until more was known of the cause of such irregularities, and of the mechanism of the changes under discussion, such results as those brought forward by Messrs. Brown and Morris should be accepted with great reservation; and Prof. Armstrong, F.R.S., observed that, apart from the information as to the comparative molecular weights of dissolved substances which Raoult's method promised to afford, it appeared that, in order to gain as complete an insight as possible into the molecular composition of solids and liquids it was important to vary in every way the proportions of substance dissolved as well as the solvent.—The action of heat on the salts of tetramethylammonium, by Dr. A. T. Lawson and Dr. N. Collie. In the majority of cases, the salts examined decompose in a simple manner, yielding trimethylamine and a salt of methyl.—The action of heat on the salts of tetramethylphosphonium, by Dr. N. Collie. The salts of tetramethylphosphonium with the oxy-acids, when heated, undergo as a rule two changes: the first and most important is the production of trimethylphosphine oxide and a ketone, and the second, which occurs only to a very limited extent, results in the formation of trimethylphosphine and a salt of methyl.

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[1] As 1 part of chlorine in 17612 million parts of water had no visible effect, and 1 in 17000 millions had a distinct effect, the influence of the difference, or of 1 part in 500,000 millions, has been detected.

Geological Society, May 9.—Mr. W. T. Blanford, F.R.S. President, in the chair.—The following communications were read:—The Stockdale Shales, by J. E. Marr, and Prof. H. A. Nicholson. The Stockdale Shales extend in an east-north-east to west-south-west direction across the main part of the Lake District, parallel with the underlying Coniston Limestone Series and the overlying Coniston Flags, with both of which they are conformable. They also occur in the neighbourhood of Appleby, and in the Sedbergh district. They are divisible into a lower group of black and dark gray and blue Graptolite-bearing shales, interstratified with hard bluish-gray mudstones, containing Trilobites and other organisms, and an upper group of pale greenish-gray shales, with thin bands of dark Graptolitic shales. The lower group (Skelgill Beds) are well seen in the stream which runs past Skelgill Farm, and enters Windermere near Low Wood; while the upper group (Browgill Beds) occurs fully developed in the Long Sleddale Valley, and its beds are very fossiliferous in Browgill. The authors divided these into a series of fossil-zones, and the beds were compared with the corresponding beds in Sweden, Bohemia, Bavaria, &c. The fossils other than Graptolites were shown to occur elsewhere in strata of Llandovery-Tarannon age, from which it was concluded that the Stockdale Shales occupy that horizon. A fault occurs everywhere between the Middle and Lower Skelgill Beds, except perhaps in the Sedbergh district; but it does not seem to cut out a great thickness of rock, and the authors gave reasons for supposing that it was produced by one set of beds sliding over the other along a plane of stratification. The beds are found to thicken out in an easterly direction, and the possibility of the existence of land in that direction was suggested. The authors directed attention to the importance of Graptolitoidea as a means of advancing the comparative study of the stratified deposits of Lower Palæozoic age. A description was given of the following new species and varieties:—*Phacops elegans*, Boeck and Stars, var. *glaber*, *Cheirurus bimucronatus*, Murch., var. *acanthodes*, *Cheirurus moroides*, *Acidaspis erinaceus*, *Harpes judex*, *H. angustus*, *Ampyx aloniensis*, *Proëtus brachypygus*, and *Atrypa flexuosa*.—On the eruptive rocks in the neighbourhood of Sarn, Caernarvonshire, by Alfred Harker.

Zoological Society, May 1.—Prof. Flower, F.R.S., President, in the chair.—Colonel Irby exhibited (on behalf of Lord Lilford) a specimen of *Aquila rapax* from Southern Spain, believed to be the first authentic specimen of this species known from the Peninsula.—Prof. Flower exhibited and made remarks on a specimen of the Japanese Domestic Fowl with the tail-coverts enormously elongated, the longest attaining a length of 9 feet. The specimen had been presented to the British Museum by Mr. F. D. Parker.—Mr. C. M. Woodford made some general remarks on the zoology of the Solomon Islands, and read some notes on the nesting-habits of Brenchley's Megapode, which lays its eggs in the sands on the sea-shore of these islands.—Mr. G. A. Boulenger read the description of a new Land-Tortoise of the genus *Homopus* from South Africa, based on specimens living in the Society's Gardens, which had been presented to the Society by the Rev. G. H. R. Fisk. The author proposed to name the species *H. femoralis*.—Mr. F. E. Beddard read the second of his series of notes on the visceral anatomy of birds. The present paper treated on the air-sacs in certain diving birds. —Mr. Francis Day read the first of a proposed series of observations on Indian fishes.

Royal Meteorological Society, April 18.—Dr. W. Marcet, F.R.S., President, in the chair.—The following papers were read:—Jordan's new pattern photographic sunshine recorder, by Mr. J. B. Jordan. The improvement in this instrument over the previous pattern of sunshine recorder consists in using two semi-cylindrical or D-shaped boxes, one to contain the morning, and the other the afternoon chart. An aperture for admitting the beam of sunlight is placed in the centre of the rectangular side of each box so that the length of the beam within the chamber is the radius of the cylindrical surface on which it is projected; its path therefore follows a straight line on the chart at all seasons of the year. The semi-cylinders are placed with their faces at an angle of 60° to each other. They are fixed on a flat triangular plate which is hinged to a suitable stand having levelling screws attached, and fitted with a graduated arc as a means of readily adjusting and fixing the cylinders to the proper vertical angle agreeing with the latitude of the station where used.—On the meteorology of South-Eastern China in 1886, by Dr. W. Doberck. This paper gives the results of observations made at the Custom-houses and lighthouses by officers of the Imperial Chinese Maritime Customs. In summer there is very little change of temperature with latitude. The temperature depends upon the distance from the nearest sea coast, and is greatest at stations farthest inland. The highest mean temperature occurred in July, and the lowest in January. The north-east monsoon blows from September to June, and the south monsoon during July and August; the latter does not blow with half the force of the former. Rainfall is greatest in Northern Formosa, and least in Northern China. Along the east coasts of Formosa and Luzon the winter is the wet season, while in China July seems to be the wettest month of the year.—Lightning in snowstorms, by Prof. A. S. Herschel, F.R.S.—Insolation, by Mr. Rupert T. Smith.

EDINBURGH.

Royal Society, May 7.—Lord Maclaren, Vice-President, in the chair.—Dr. G. Sims Woodhead communicated a paper written by Mr. Robert Irvine and himself, on the secretion of carbonate of lime by animals.—A paper by Mr. Irvine and Mr. George Young, on the solubility of carbonate of lime under different forms in sea-water, was also read.—Dr. Alexander Bruce described a case of absence of the *corpus callosum*, in the human brain.—Dr. J. Murray discussed the distribution of some marine animals on the west coast of Scotland.—Mr. W. E. Hoyle described some larvæ of certain Schizopodous Crustacea from the Firth of Clyde.

May 21.—The Rev. Prof. Flint, Vice-President, in the chair.—A series of photographs of the Nice Observatory, presented by M. Bischoffsheim through the Astronomer-Royal for Scotland, were exhibited.—A note by Prof. Cayley, on the hydrodynamical equations, was communicated. The author discusses the result of the elimination of the symbol denoting the pressure by differentiation of the three fundamental hydrokinetical equations. —Dr. Archibald Geikie treated fully the history of volcanic action during Tertiary time in the British Islands.

PARIS.

Academy of Sciences, May 22.—M. Janssen, President, in the chair.—Obituary notice of M. Hervé Mangon, member of the Section for Rural Economy, and Vice-President of the Academy for the year 1888, by the President. M. Mangon, who was born in Paris on July 31, 1821, and died there on

May 15, 1888, may be regarded as the founder of agronomic science, to which he devoted many years of assiduous labour. To him France is indebted for the introduction of all the more useful agricultural processes. He also gave a great stimulus to the associated science of meteorology, and rendered important services to ballooning, especially in connection with military tactics.—On the part played by atmospheric nitrogen in vegetable economy, by M. E. Chevreul. A few summary observations are made in reference to the memoir recently presented to the Academy by MM. Gautier and Drouin. These observers having announced as a result of their personal experiments and as something new to science that the gaseous nitrogen of the atmosphere is absorbed by plants, it is pointed out that the Commission appointed in 1854 to investigate the question decided in favour of M. Georges Ville's theory and against that of M. Boussingault. Since then the part played by atmospheric nitrogen in the vegetative process has been carefully studied both in France and Germany, and hitherto the results, such as those of MM. Gautier and Drouin, have tended to confirm the conclusions first arrived at by M. Georges Ville.—The sardine on the Marseilles coast, by M. A. F. Marion. The sardine appears yearly in these waters, where a total of 409,055 kilogrammes were taken during the period between March 1887 and the end of February 1888. Details are given regarding the food, migrations, and breeding-season of this fish.—Study of the planet Mars, by M. F. Terby. Three small round spots, white and brilliant, are visible on the continuation of *Erebus* (left or west side), when the *Trivium Charontis* is midway from the central meridian in the eastern half of the disk. These spots, at first scarcely perceptible, become brighter and whiter as they approach the limb, where they become diffused by irradiation like the polar spot. The black line, which seems to divide the north polar spot, has been perfectly visible since May 12. Facing it on the outer side is a small hyperborean tract, white or snowy, but less brilliant and white than the true polar spot, of which it seems at first sight to form an integral part. It is evidently the same phenomenon as that which has recently been simultaneously observed by M. Perrotin, as well as by M. Schiaparelli.—On an electro-chemical actinometer, by MM. Gouy and H. Rigollot. Copper oxidized or covered with basic salts, and plunged into water or into a solution of sulphate of copper, is known to undergo variations of electromotor force under the action of light, effects which can be clearly indicated only with intensely luminous means. But the authors find that the oxidized copper plunged into a solution of metallic chloride, bromide, or iodide becomes, on the contrary, extremely sensitive to luminous rays even of slight intensity, and may consequently be employed as an actinometer. Details are given of the process by which they have constructed the apparatus based on this phenomenon.—Determination of the heat of combustion of a new solid substance isomerous with benzine, by M. W. Louguinine. Five experiments with a beautiful specimen of this substance, discovered by M. Grimer, give a mean of 10,863·9 calories for the heat liberated in the combustion of 1 grain. The heat of combustion of benzine is much less (776,000 cal.), corresponding to a body whose constitution is absolutely different from that of the isomerous substance.—On the Pliocene formations of the Montpellier district, by M. Viguier. In this paper the conclusions are summed up of an extensive investigation of this geological area. Three distinct groups are determined: (1) Arnusian, fresh-water deposits, puddings and gravels, with remains of *Elephas meridionalis*; (2) Astian, also fresh-water, clays and marls, with remains of *Semnopithecus monspessulanus*, *Helix quadrifasciata*, *Triptychia sinistrorsa*, &c.; (3) Plaisancian, marine deposits, sandy and other marls, with remains of *Potamides basteroti*, *Melampus myotis*, *Rhinoceros leptorhinus*, *Mastodon brevirostris*, &c.

Berlin.

Meteorological Society, May 1.—Dr. Vettin, President, in the chair.—Dr. Perlewitz spoke on aperiodic variations of temperature. He based his researches on the observations made at Berlin during the forty years 1848–87, and during ninety-three years, 1791–1883, at Breslau. If a year is divided into halves, the first half is characterized by a normal curve of rising temperature, the second half by a similarly normal curve of falling temperature. Both curves, however, show negative irregularities, whose number may be very considerable in any one month: thus in May these irregularities (fall of temperature) occurred on more than thirteen days as against seventeen days on which the curve rose regularly; and similarly, in October, there were more than twelve days on which an irregularity (rise of temperature) was observed as against nineteen days with a normally falling temperature. On the whole the number of these irregularities is greater in the first half of the year than in the second, so that the heat of the second half is greater than that of the first. A whole series of interesting details exists in connection with the number, magnitude, and periodic duration of the changes of temperature during both the normal and abnormal times; these cannot however be considered here.—Dr. Vettin communicated the results of his observations on the daily periodicity in the velocity of the wind, extending over a period of two years. From direct determination of the movement of smoke coming from a chimney, and from observations with a home-made anemometer, he found that in addition to the well-known maximum velocity of the wind which occurs at midday, there is a second maximum just after midnight. This latter maximum is very small in summer, but in winter, on the other hand, it is much greater and even exceeds that maximum which occurs at midday. This second maximum is not very marked as an average on the whole year. The speaker then gave a detailed description of the construction of his anemometer, which he exhibited to the Society. He further described a spring vane which he had made, which he has erected at the window of his house in a moderately wide street; this vane indicates accurately not only the direction of the wind which is blowing up or down the street, but also of any wind which may be blowing over the houses at right angles to this. Experiments made with tobacco-smoke in a glass-covered chamber have shown that the wind which blows over the houses gives rise to ascending and descending currents of air along their walls, causing an elevation or depression of the vane. The vane also records accurately the direction of a wind which blows at any angle other than at right angles to the axis of the street. Suitable as this spring vane is for observers who live in narrow streets, it is specially adapted for observations in narrow mountain valleys, in which the direction of the wind cannot be ascertained by any other means.

Physical Society, May 4.—Prof. von Bezold, President, in the chair.—Prof. Schwalbe gave expression to the loss which the Society had sustained through the death of Prof. Hoh, for many years an active collaborator with the "Fortschritte der Physik."—In the election which then followed, Prof. Kundt, the new Director of the Physical Institute, was chosen as first Vice-President in the place of the late Prof. Kirchhoff.—Dr. Koenig spoke on the instantaneous photographs made by Ottomar Anschütz, of Lissa, accompanied by demonstrations and examples of the photographs. Anschütz began taking instantaneous photographs in 1882, operating at first upon bodies of troops during the manœuvres. Later on, at the instance of the Minister of War, he photographed horses and riders moving at every sort of pace. In addition, up to 1885, he busied himself with photographing many animals in the different and frequently very bizarre positions in which they place themselves during their movements. Some of the most interesting photographs taken at this time are those of storks. From 1885 onwards he has been taking serial-photographs of men and animals in motion, obtaining pictures of the consecutive stages of each movement. From these serial-photographs it is possible to draw many scientific deductions, by following the course of the centre of gravity of the object in the successive pictures of horses and men when running and jumping. A complete knowledge of the mechanics of motion can, however, only be arrived at from these series of photographs when the interval of time between each consecutive member of the series is equal and extremely small, a result which Anschütz has nearly obtained. Latterly he has taken pictures of large masses in motion, such as processions, &c. The numerous photographs which the speaker exhibited and briefly explained, testified completely to the technical excellence at which Anschütz has already arrived. The apparatus used for instantaneous photography was exhibited at the same time.

Physiological Society, May 11.—Prof. du Bois-Reymond, President, in the chair.—Dr. Koenig spoke on his measurement of the intensities of light in the spectrum. The method employed was as follows. A circular field of vision was divided into two halves, of which one was illuminated with some colour of the spectrum of fixed intensity, usually with red; the colour to be compared with this was then applied to the other half, and made to vary until it produced the sensation of a light-intensity equal to that of the red. The first measurements were made on Dr. Broddahn, whose eyes are dichromatic (green colour-blind).

By taking the mean of the separate determinations for different parts of the prismatic spectrum, Dr. Koenig had constructed a curve for the light-intensity of all the colours of the spectrum; there was a difference of at most 2 per cent. between the values of the separate measurements and the mean. The speaker then made similar measurements with his own normal trichromatic eyes; in this case he obtained a greater difference between the value of the separate determinations and the mean (up to 5 per cent.) but the curve of light-intensity for the whole range of the spectrum was found to be identical with that obtained from Dr. Broddahn. By reducing the prismatic spectrum used in these experiments to one produced by diffraction, he was able to calculate the curve of light-intensity for a normal spectrum. Comparing this curve with those which he had obtained, in conjunction with Dr. Dieterici, for the sensations of the three primary colours, red, green, and blue (as determined for each point in a normal spectrum), he found that the curve of light-intensity of the spectrum was identical with that for the sensation of red. From this it must be concluded that the sensation of luminous intensity for each separate light is simply dependent on the amount of red contained in it, or, to state this more accurately, the brightness of each kind of light is determined by the extent to which it stimulates the red-perceiving fibres of the retina. Dr. Koenig had some time ago given expression to the conjecture that in the dichromatic eye it is not the fibres for the perception of the third colour which are wanting (the red-perceiving for red colour-blindness and green-perceiving for green), but that they are, so to say, differently tuned; tuned down in those who are colour-blind to green, so that they can only perceive the sensation due to light as red, tuned up to a higher pitch in those who are red colour-blind, so that when they are stimulated by rays of greater wave-length they only perceive green. It is now possible to verify the above conjecture experimentally as follows. The measurements of luminous intensities throughout the spectrum were made upon the eye of another person who was colour-blind, and this time on one who was red colour-blind; in this case the curve obtained was identical with that of the sensation of green. The phenomena observed by Dove, that the relative luminous intensities of red and blue vary according to the intensity of the illumination, were verified by Dr. Koenig, but only up to a certain limit; beyond this limit, the *relative* luminosities of these two colours underwent no further alteration in the brightness of the illumination.—Prof. Gad discussed Prof. Fick's views on blood-pressure in the capillaries, which the latter believed he had placed on an experimental basis by means of an artificial vascular scheme; according to this the pressure in the capillaries could not be much less than in the arteries, and only sinks appreciably as the capillaries are passing over into the veins. Prof. Gad showed that the conditions existing in the above scheme cannot be applied to the blood-capillaries; he further pointed out that the requisite data for calculating the true blood-pressure in the capillaries can be obtained from a theoretical consideration of the rate of flow in, and sectional area of, these vessels, and from this the pressure would appear to be about half of that which exists in the aorta. A true basis for any theory of capillary blood-pressure can only be obtained from such experimental investigation as admits of being applied to various parts of the purely theoretical consideration.

STOCKHOLM.

Royal Academy of Sciences, April 11.—Prof. W. C. Williamson, of Manchester, was elected a foreign member of the Academy.—Critical remarks on the researches of Foeppl on the electrical conductibility of the vacuum, by Prof. Edlund.—A theory of isohydric solutions, by Dr. Arrhenius.—Remarks on the fossils of the Cretaceous formation of Sweden, by Prof. B. Lundgren.

May 9.—On *Triglaps pingelii*, an Arctic fish, found for the first time off the shores of Sweden, and on some specimens of *Syrrhaptes paradoxus* lately shot in Sweden, by Prof. F. A. Smitt.—The whale of Swedenborg (*Balæna svedenborgii*, Liljeborg) found in the diluvial strata of Sweden, described by Dr. Carl Aurivillius.—On the anazotic, stored up nutriments of the Gramineæ, by Dr. C. J. Johanson.—A generalization of the researches of Laplace on the libration in the orbits of the planets, by Dr. K. Bohlin.—On the points of approximation in the theory of perturbation, by the same.—Some extracts from the report of the French scientific expedition to Spitzbergen and other places in the years 1838, 1839, and 1840, by C. B. Lilliehöök, R.N.—Contributions to the theory of the undulatory movement in a gaseous medium (conclusion), by Dr. A. W. Bäcklund.—Derivates of the δ-amido-naphthaline-sulpho-acid, by Prof. P. T. Cleve.—Derivates of the γ-amido-naphthaline-sulpho-acid, by the same.—On naphthol acids, by Dr. Å. G. Ekstrand.—On abnormal forms of the first abdominal appendices of some female cray-fishes, by Dr. D. G. Bergendahl.—On two new Lamellibranchiates from the Arctic post-glacial beds of Scania, by Herr G. Clessin, of Ochsenfurth, Bavaria.

AMSTERDAM.

Royal Academy of Sciences, April 27.—Mr. J. A. C. Oudemans spoke of Airy's double-image micrometer, and stated the result of his efforts to discover the conditions to which this apparatus must be made to conform, in order that the value of one screw-turn may be independent of the adjustment of the eye. He had found that the distance from the first to the second lens must be equal to the focal length of the first lens—a condition already fulfilled in the micrometer for another purpose.

BOOKS, PAMPHLETS, and SERIALS RECEIVED.

British Petrography: J. J. Harris Teall (Dulau).—A Manual of Orchidaceous Plants, Part 3 (Veitch).—Longmans' Commercial Mathematics (Longmans).—A Wanderer's Notes, 2 vols.: W. Beatty-Kingston (Chapman and Hall).—Principles of Agricultural Practice: J. Wrightson (Chapman and Hall).—Discromatopsia, Enrico dal Pozzo di Mombello (Scariglia, Foligno).—Soaps and Candles: J. Cameron (Churchill).—Die Regenverhältnisse der Iberischen Halbinrel: G. Hellmann (Pormetter, Berlin).—Proceedings of the Geologists' Association, February (Stanford).

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